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We Claim:

1.

An air throttle body assembly of a combustion engine comprising:

an air throttle body having a through air passage and an exterior surface;

a throttle valve constructed and arranged within the air through passage for controlling air flow;

an electronic control unit integrated into the air throttle body, the electronic control unit having a cover engaged to the throttle body, a chamber defined directly between the cover and the exterior surface; and a heat sink member exposed within the chamber and projecting outward through the cover;

wherein the air throttle body is made of a thermally conductive material for transferring heat from the chamber into the air through passage; and

wherein the heat sink member is made of a thermally conductive material for transferring heat through the cover.

2.

The air throttle body assembly set forth in claim 1 comprising:

a circuit board of the electronic control unit disposed in the chamber;

an inner compartment of the chamber defined between the external surface and the circuit board; and

wherein the heat sink member is exposed within the inner compartment.

3.

The air throttle body assembly set forth in claim 2 comprising:

an outer compartment of the chamber defined between the circuit board and the cover; and

wherein the heat sink member extends through the outer compartment.

4.

The air throttle body assembly set forth in claim 3 wherein the outer compartment is filled with a corrosion preventing material.

5.

The air throttle body assembly set forth in claim 2 further comprising a microprocessor of the electronic control unit disposed in the inner compartment, directly engaged mechanically to the heat sink member and engaged electrically to the circuit board.

6.

The air throttle body assembly set forth in claim 5 comprising:

an end of the shaft of the throttle valve disposed in the inner compartment;

a position sensor of the electronic control unit disposed in the inner compartment and engaged electrically to the circuit board; and

wherein the position of the throttle valve is monitored by the microprocessor.

7.

The air throttle body assembly set forth in claim 5 comprising:

an intake air temperature sensor of the electronic control unit constructed and arranged to sense air temperature within the air through passage; and

wherein the intake air temperature sensor is engaged electrically to the circuit board and wherein the intake air temperature is monitored by the microprocessor.

8.

The air throttle body assembly set forth in claim 7 comprising:

a sleeve engaged between the throttle body and the circuit board; and

wherein the intake air temperature sensor is disposed within the sleeve for providing communication with the air through passage.

9.

The air throttle body assembly set forth in claim 5 comprising:

an intake air pressure sensor of the electronic control unit constructed and arranged to sense air pressure within the air through passage; and

wherein the intake air pressure sensor is engaged electrically to the circuit board for monitoring of air pressure by the microprocessor.

10.

The air throttle body assembly set forth in claim 9 comprising:

a sleeve engaged between the throttle body and the circuit board; and

wherein the intake air pressure sensor is disposed within the sleeve for providing communication with the air through passage.

11.

The air throttle body assembly set forth in claim 5 further comprising a fuel injector mounted to the throttle body and controlled by the microprocessor for injecting liquid fuel into the air through passage downstream of the throttle valve.

12.

The air throttle body assembly set forth in claim 5 wherein the heat sink member has a plurality of elongated ribs projecting laterally outward of the cover for transferring heat from the heat sink member by convection.

13.

The air throttle body assembly set forth in claim 12 comprising:

a plurality of drivers disposed in the inward compartment and engaged directly to the heat sink member; and

wherein the drivers communicate electrically with the circuit board.

14.

The air throttle body assembly set forth in claim 13 wherein the plurality of drivers include an ignition coil transistor, a fuel pump transistor, and a fuel injector transistor.

15.

An electronic fuel injection system of a four-stroke combustion engine having an engine block carrying a piston cylinder for guiding a reciprocating piston engaged to a crankshaft, a flywheel engaged concentrically to the crankshaft, an intake valve engaged operatively to the crankshaft for sequentially flowing a mixture of fuel-and-air into the combustion chamber of the piston cylinder during an intake stroke of the piston, and a spark plug mounted to the engine block and communicating with the combustion chamber for igniting the mixture of fuel-and-air during a compression stroke, the electronic fuel injection system comprising:

a throttle body having a through passage communicating with the combustion chamber when the intake valve is open during the intake stroke;

a throttle valve constructed and arranged within the through passage for controlling the air flow;

a circuit board engaged to the throttle body;

an inner compartment defined by the throttle body and the circuit board;

wherein the throttle body is made of a thermally conductive material for transferring heat from the inner compartment into the throttle body by thermal convection, through the throttle body by thermal conduction and into the through passage by thermal convection;

a heat sink member exposed within the inner compartment and disposed adjacent the circuit board;

a microprocessor located in the inner compartment; and

at least one driver engaged directly to the heat sink member wherein heat generated by the driver is transferred away from the inner compartment and into the heat

sink member by thermal conduction and out of the heat sink member away from the inner compartment by thermal convection.

16.

The electronic fuel injection system set forth in claim 15 comprising:

an fuel injector transistor of the at least one driver controlled by the microprocessor;

a fuel injector mounted to the throttle body and exposed within the air passage for injecting liquid fuel into the through passage downstream of the throttle valve; and

wherein the fuel injector transistor electrically powers the fuel injector.

17.

The electronic fuel injection system set forth in claim 16 comprising:

an ignition coil transistor of the at least one driver controlled by the microprocessor; and

wherein the ignition coil transistor electrically powers the spark plug.

18.

The electronic fuel injection system set forth in claim 17 comprising:

a fuel pump transistor of the at least one driver controlled by the microprocessor;

a fuel pump constructed and arranged to supply liquid fuel at a controlled pressure to the fuel injector; and

wherein the fuel pump transistor electrically powers the fuel pump.

19.

The electronic fuel injection system set forth in claim 15 wherein the microprocessor is engaged directly to the heat sink member.

20.

The electronic fuel injection system set forth in claim 15 comprising:

an end of a rotating shaft of the throttle valve disposed in the inner compartment;

a position sensor of the electronic control unit disposed in the inner compartment and engaged electrically to the circuit board, wherein the position of the throttle valve is monitored by the microprocessor;

an intake air temperature sensor of the electronic control unit constructed and arranged to sense air temperature within the air through passage, wherein the intake air temperature sensor is engaged electrically to the circuit board and wherein the intake air temperature is monitored by the microprocessor; and

an intake air pressure sensor of the electronic control unit constructed and arranged to sense air pressure within the air through passage, wherein the intake air pressure sensor is engaged electrically to the circuit board for monitoring of air pressure by the microprocessor.